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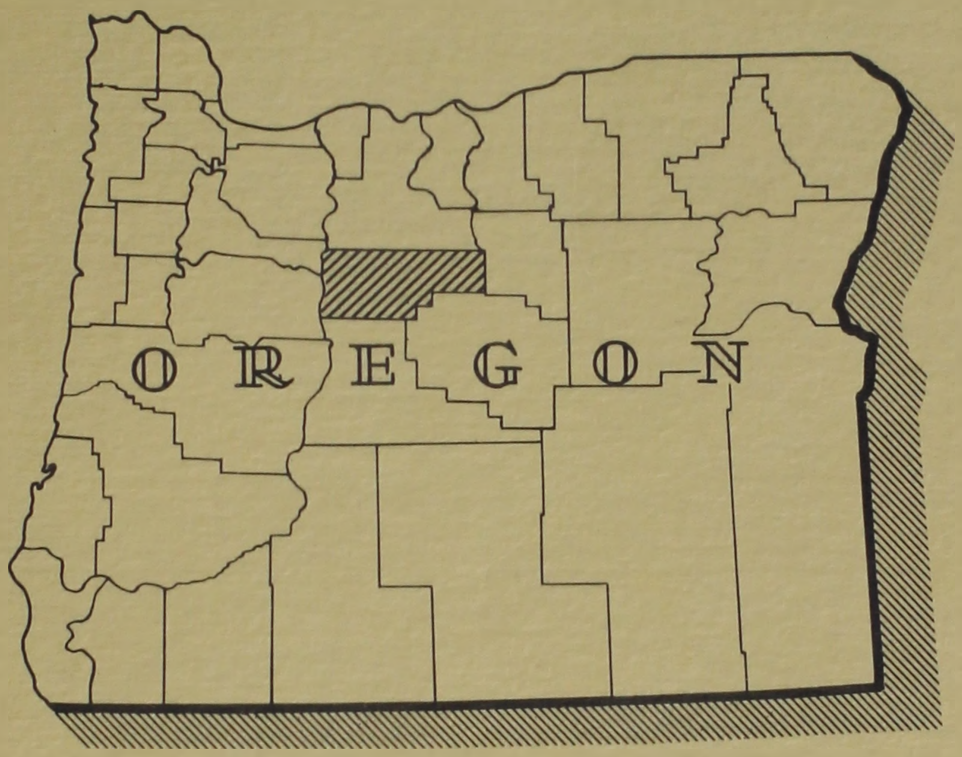
FOREST STATISTICS FOR JEFFERSON CO., OREGON

FOREST SURVEY REPORT NO. 115



U. S. DEPARTMENT OF AGRICULTURE · FOREST SERVICE
PACIFIC NORTHWEST FOREST AND RANGE EXPERIMENT STATION
R. W. COWLIN, DIRECTOR

PORTLAND, OREGON JUNE 1954

PREPARED BY THE DIVISION OF FOREST ECONOMICS

M. E. Baudendistel, In Charge

F. L. Moravets, Forest Survey Resource Analyses
C. E. Mayer, Forest Survey Field Supervisor

Field and Office Work in Jefferson County, Oregon[1/]

by

Melvin P. Twerdal
Benjamin Spada
Thomas C. Adams
Donald R. Gedney
Robert O. McMahon
Ormond H. Doty

Robert B. Pope
Kathryn Flaherty
Inga E. Fulkerson
Gerry L. Seely
Emma G. Johnson
Beverly J. Davis

1/ Acknowledgment is made of cooperation from Public and private agencies in mapping parts of the county, and from public agencies in furnishing ownership records.

FOREST STATISTICS

FOR

JEFFERSON COUNTY, OREGON

Forest Survey Report No. 115

by

F. L. Moravets

U. S. Department of Agriculture Forest Service
Pacific Northwest Forest and Range Experiment Station

R. W. Cowlin, Director
June 1954

FOREWORD

This publication summarizes in statistical form the results of a reinventory of the forests of Jefferson County, Oregon, conducted in 1953. This reinventory is a part of the maintenance phase of the Forest Survey, a nationwide project of the Forest Service authorized by the McSweeney-McNary Forest Research Act of 1928 and amended June 25, 1949. The purpose of the Forest Survey is to periodically inventory the extent and condition of forest lands and the timber and other products on them, to ascertain rates of forest growth and depletion, to estimate present consumption of timber products and to analyze and make available in reports survey information needed in the formulation of forest policies and programs.

The Forest Survey is conducted in the various forest regions of the Nation by the regional forest experiment stations of the Forest Service. In the Pacific Northwest region of Oregon and Washington it is an activity of the Pacific Northwest Forest and Range Experiment Station at Portland, Oregon.

Under the initial phase of the Forest Survey the forests of Jefferson County were inventoried in 1934. A statistical report "Forest Statistics for Jefferson County, Oregon" and a detailed forest type map--scale 1 inch to the mile--were released. The reinventory was conducted during the months of June to August 1953. Another result of the reinventory is a revised forest type map of the county, on a scale of either 1 or 2 inches to the mile. 1/

1/ A print of the forest type map is available at cost of blueprinting. For information write Director, Pacific Northwest Forest and Range Experiment Station, 729 N. E. Oregon St., Portland 14, Oregon.

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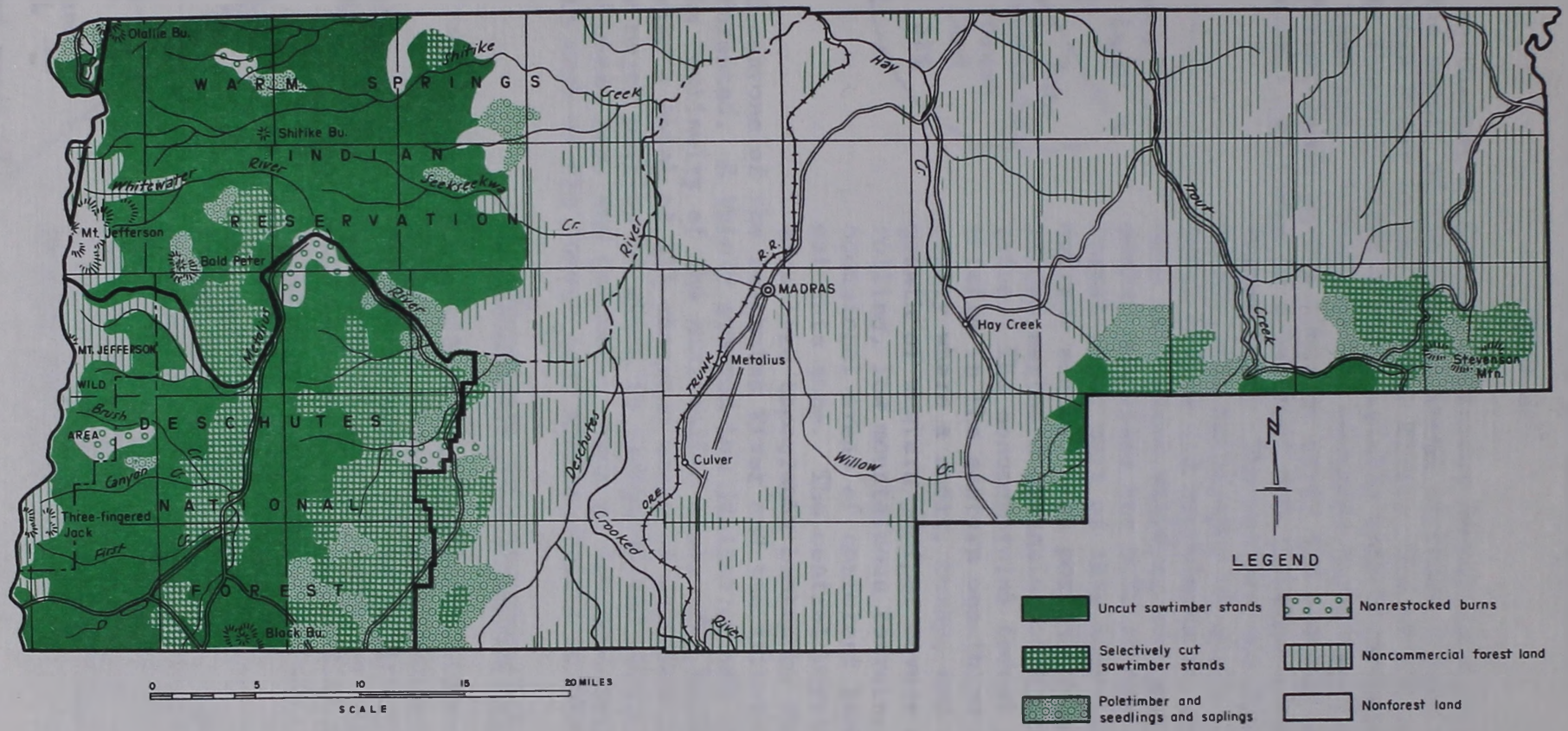
FIGURE 1

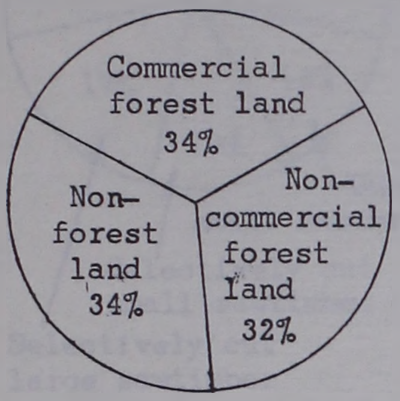
FOREST STAND-SIZE AND CONDITION CLASSES
JEFFERSON COUNTY, OREGON
1953



SIGNIFICANT FINDINGS IN THE FOREST INVENTORY

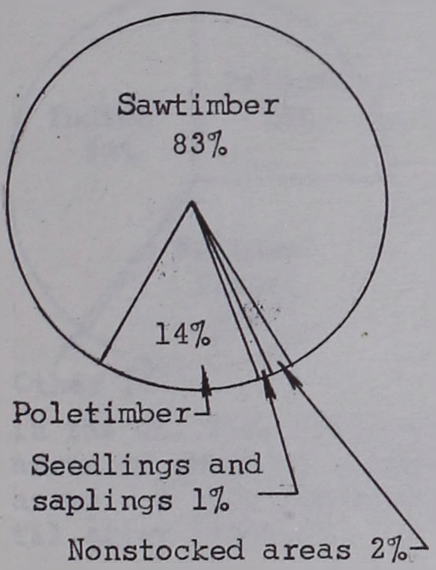
LAND USE

Situated in north-central Oregon, Jefferson County extends some 70 miles from the summit of the Cascade Range eastward across the gorge of the Deschutes River to the John Day River. The county's gross land area of 1,148 thousand acres divides equally into three broad classes or zones of land use. A total of 388 thousand acres is classed as commercial forest land; on 373 thousand acres the forests are classed as noncommercial; and there is a total of 387 thousand acres of nonforest land. The western one-third of the county, the topography of which varies from level plains and benchlands to gentle slopes, deep and narrow valleys, and high alpine peaks, comprises the bulk of the commercial forest zone; part of this zone lies in the extreme southeastern portion on a quite rugged westward extension of the Blue Mountains. The noncommercial forest zone lies chiefly in the eastern one-third of the county where a short, bushy, and sparse growth of western juniper covers much of the rolling, low mountainous terrain; there are occasional areas of nonforest land throughout this zone. The central portion, a plateau-like topography broken by the narrow, steep-walled canyons of the Deschutes River and its tributaries, is largely nonforested. A thinly stocked low juniper growth in places breaks up the continuity of the nonforested area. The Bureau of the Census reported a total of 115 thousand acres of cropland in the county in 1949, the major portion of which is irrigated and cropped for small grains, seed peas, hay, and potatoes. Much of the nonforest land is grazed, as is much of the forest land during certain seasons of the year.



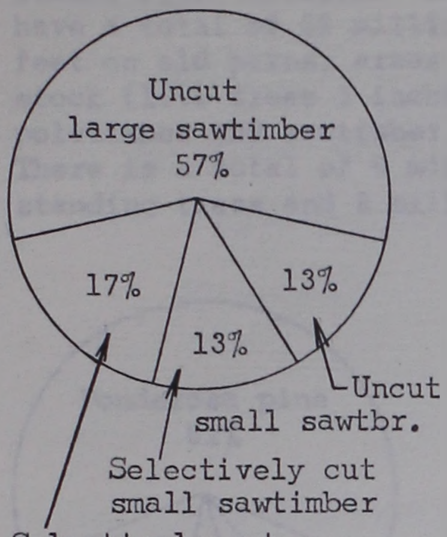
Stand-Size and Condition Classes

Classification of the 388 thousand acres of commercial forest land by stand-size or condition class shows 322 thousand acres occupied by sawtimber stands (trees 11" d.b.h. and larger). There are large unbroken tracts of these stands, fig. 1. Stands of poletimber (trees 5" - 11" d.b.h.) cover 55 thousand acres and seedling and sapling stands cover an additional 4 thousand acres. In general these young stands occur in quite small tracts. Areas deforested by fire that are in a nonstocked condition (less than 10 percent stocked) total 7 thousand acres. This acreage is in several small tracts.



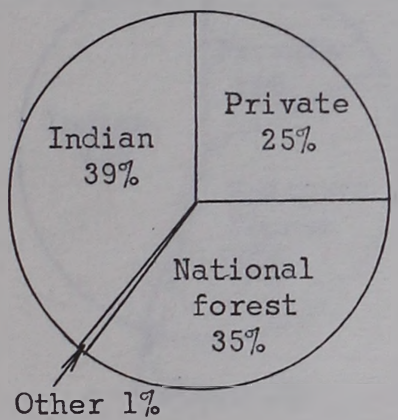
Character of Sawtimber Stands

The forests of the county were altered only slightly through timber cutting prior to the mid 1940's. The initial Forest Survey inventory in 1934 found the logged area to be less than 6 thousand acres. This cutting supplied logs to 2 or 3 small sawmills producing lumber for local use. In the period 1947-52 reported log production averaged 104 million board feet, and the 1953 inventory found the logged area to total 132 thousand acres. On 98 thousand acres of this area the volume in reserve stands is sufficient--1,500 board feet or more per acre--to classify them as selectively cut sawtimber. Practically all the remainder of the logged area is currently occupied by poletimber stands; there is less than a thousand acres of seedling and sapling stands. Sawtimber stands in which there has been no cutting total 224 thousand acres; on 184 thousand acres of this total the stands are classed as "large," i.e., the majority of the volume is in trees more than 22 inches d.b.h.; and on 40 thousand acres they are classed as "small," i.e., from 12 to 22 inches d.b.h. Of the selectively cut sawtimber stands, those on 55 thousand acres are classed as large; those on 43 thousand acres are small. Ponderosa pine predominates in the stands on 88 percent of the sawtimber acreage. Most of the remainder of the acreage has mixed stands in which either Douglas-fir, one of the true firs, or mountain hemlock is the key species; on a few thousand acres lodgepole pine forms practically pure stands.



Ownership of Commercial Forest Land

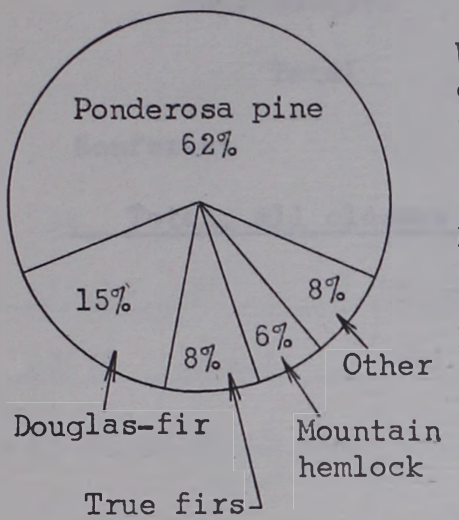
A fourth, 98 thousand acres, of the commercial forest land is in private ownership. Seventy-seven percent of the private acreage has been logged, generally cut on a heavy-selection basis; however, the reserve stand on 48 thousand acres is of sufficient volume to qualify as selectively cut sawtimber. The northern half of the commercial forest zone is in the Warm Springs Indian Reservation. Here, the Warm Springs Indians own 153 thousand acres of forest land. The Indian lands are very largely stocked with sawtimber stands; to date 18 thousand acres have been selectively logged. A total of 134 thousand acres is in national forest ownership. Of this area, 130 thousand acres is in the Deschutes National Forest and occupies the bulk of the south half of the commercial forest zone. Four thousand acres in the extreme northwest corner of the county is in the Mt. Hood National Forest. Uncut sawtimber stands cover 87 thousand acres of national forest land and selectively cut sawtimber 32 thousand acres. A very large part of the latter area was in private ownership until after logging.



TIMBER VOLUME

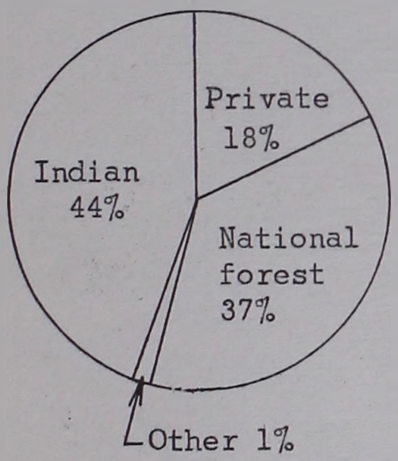
Live sawtimber trees (11 inches d.b.h. and larger) on the commercial forest land of the county contain an estimated net volume of 5,207 million board feet, log scale, Scribner rule. Uncut sawtimber stands contain 3,841 million of this volume and selectively cut sawtimber stands 1,333 million. Scattered sawtimber trees in poletimber stands have a total of 32 million board feet and there is a million board feet on old burns, areas classed as nonstocked. Net volume of growing stock (live trees 5 inches d.b.h. and larger, including trees of both poletimber and sawtimber size) is estimated at 1,041 million cubic feet. There is a total of 9 million cubic feet of sound usable wood in dead standing trees and 2 million in live cull trees.

Volume of Sawtimber by Species



With the exception of 11 million board feet of black cottonwood all of the live sawtimber volume is of softwood species. Ponderosa pine is the most important and abundant; its volume totals 3,237 million board feet. Volume of pine in uncut stands is 2,251 million, that in selectively cut stands is 964 million. Classification of the ponderosa pine volume by broad diameter class shows: 26 percent in the 11" to 21" d.b.h. class, 36 percent in the 21" to 31" class, 23 percent in the 31" to 41" class, and 15 percent in the 41"+ class. Species other than ponderosa pine with appreciable volumes in Jefferson County are Douglas-fir with 800 million board feet, mountain hemlock with 313 million, and the true firs with a combined volume of 425 million.

Ownership of Sawtimber Volume



Net volume of sawtimber trees on privately owned forest lands amounts to 942 million board feet. About 70 percent of this volume is in residual stands on selectively cut areas, 30 percent in uncut stands. Approximately 90 percent of the Indian-owned sawtimber volume, totaling 2,295 million feet, is in uncut sawtimber stands. Practically all of the remainder is in selectively cut stands; there is a small volume in the overstory of poletimber stands. Sawtimber volume on national forest lands totals 1,939 million feet, of which a little more than three-fourths is in uncut stands and nearly all the remainder is in selectively cut stands. The combined volume in "other" ownerships--State, county, and federally owned public domain--amounts to 31 million feet.

Table 1.--Land area by major classes of land, 1953

Class of land	Area
	Acres
Forest:	
Commercial	388,370
Noncommercial:	
Productive-reserved	16,730
Unproductive	355,720
Total	760,820
Nonforest	387,670
Total, all classes	1,148,490

Table 2.--Area of commercial forest land by ownership and stand-size class, 1953

Ownership class	Total	Saw-timber stands	Pole-timber stands	Seedling and sapling stands	Nonstocked areas
	Acres	Acres	Acres	Acres	Acres
Private	98,230	63,910	32,350	680	1,290
State	200	200			
County	320	320			
Federally owned or managed:					
Bureau of Land Mgt.	2,350	1,470	880		
Indian	152,740	137,120	12,750	2,040	830
National Forest	134,530	119,440	9,290	1,080	4,720
Total Federal	289,620	258,030	22,920	3,120	5,550
All ownerships	388,370	322,460	55,270	3,800	6,840

Table 3.--Area of commercial forest land by major forest type and stand-size class, 1953

Forest type	Total	Sawtimber stands		Pole-timber stands	Seedling and sapling stands	Non-stocked areas
		Large 1/	Small 2/			
	Acres	Acres	Acres	Acres	Acres	Acres
Ponderosa pine	332,770	229,510	52,760	47,220	3,280	
Lodgepole pine	7,930		4,230	3,580	120	
Douglas-fir	21,180	7,520	11,350	2,310		
Western larch	160		160			
Fir-spruce	19,490	2,270	14,660	2,160	400	
Nonstocked areas	6,840					6,840
Total	388,370	239,300	83,160	55,270	3,800	6,840

1/ 21 inches d.b.h. and larger.

2/ 11 to 21 inches d.b.h.

Table 4.--Area of commercial and noncommercial forest land and nonforest land by cover type and ownership class, 1953

(Acres)

Survey type symbol	Cover type	Total	Unreserved								Reserved		
			Total	Private	State	County	Federally owned or managed				Total	State	Federal
							Indian	Bureau of Land Mgt.	Bureau of Reclamation	National Forest			National Forest
	ALL LANDS												
	Forest land	760,820	731,430	375,170	240	320	191,410	27,760	300	136,230	29,390	3,290	26,100
	Nonforest land	387,670	382,490	307,360	310		60,900	11,640	500	1,780	5,180	3,990	1,190
	Total	1,148,490	1,113,920	682,530	550	320	252,310	39,400	800	138,010	34,570	7,280	27,290
	COMMERCIAL FOREST LAND												
P4	Ponderosa pine large sawtimber	232,740	229,510	25,980	120	320	98,750	640		103,700	3,230		3,230
P3	Ponderosa pine small sawtimber	52,760	52,760	34,770	80		12,170	710		5,030			
P2	Ponderosa pine poletimber	47,340	47,220	30,920			8,340	560		7,400	120		120
P1	Ponderosa pine seedlings and saplings	3,280	3,280	680			1,520			1,080			
LP3	Lodgepole pine small sawtimber	4,950	4,230				3,010			1,220	720		720
LP2	Lodgepole pine poletimber	3,740	3,580				1,690			1,890	160		160
LP1	Lodgepole pine seedlings and saplings	120	120				120						
D4	Douglas-fir small old growth and large young-growth sawtimber (red fir)	7,520	7,520	580			5,680			1,260			
D3	Douglas-fir small young-growth sawtimber	11,350	11,350	2,580			7,860	120		790			
D2	Douglas-fir poletimber	2,310	2,310	1,430			560	320					
WL3	Western larch small sawtimber	160	160				160						
WF3	White fir small sawtimber	1,280	680				560			120	600		600
WF2	White fir poletimber	280									280		280
FM4	True fir -mountain hemlock large sawtimber	2,270	2,270				2,190			80			
FM3	True fir-mountain hemlock small sawtimber	24,480	13,980				6,740			7,240	10,500		10,500
FM2	True fir-mountain hemlock poletimber	2,160	2,160				2,160						
FM1	True fir-mountain hemlock seedlings and saplings	400	400				400						
F	Deforested by fire, nonstocked	7,960	6,840	1,290			830			4,720	1,120		1,120
	Total	405,100	388,370	98,230	200	320	152,740	2,350		134,530	16,730		16,730
	NONCOMMERCIAL FOREST LAND												
J	Juniper	338,370	335,080	276,940	40		32,230	25,410	300	160	3,290	3,290	
SA	Subalpine	14,140	5,730				5,040			690	8,410		8,410
NR	Noncommercial rocky	3,210	2,250				1,400			850	960		960
	Total	355,720	343,060	276,940	40		38,670	25,410	300	1,700	12,660	3,290	9,370
	NONFOREST LAND												
A&G	Agriculture, grass and brush	378,800	374,810	304,410	310		57,580	11,600	500	410	3,990	3,990	
O	Open-nonvegetative	8,870	7,680	2,950			3,320	40		1,370	1,190		1,190
	Total	387,670	382,490	307,360	310		60,900	11,640	500	1,780	5,180	3,990	1,190

Table 5.--Area of commercial forest land by generalized forest type and ownership class, 1953

(Acres)

Generalized forest type		Total	Unreserved							Reserved	
			Total	Private	State	County	Federally owned or managed			Total	Federal
							Indian	Bureau of Land Mgt.	National Forest		National Forest
Conifer large sawtimber:											
Types P4, D4, and FM4.	Uncut	187,260	184,030	15,460	120	320	90,600	560	76,970	3,230	3,230
	Selectively cut	55,270	55,270	11,100			16,020	80	28,070		
	Total	242,530	239,300	26,560	120	320	106,620	640	105,040	3,230	3,230
Conifer small sawtimber:	Uncut	51,590	39,770	840	80		28,460	40	10,350	11,820	11,820
Types P3, LP3, D3, WL3,	Selectively cut	43,390	43,390	36,510			2,040	790	4,050		
WF3, and FM3.	Total	94,980	83,160	37,350	80		30,500	830	14,400	11,820	11,820
Conifer poletimber:	On cutovers	32,020	32,020	26,430				280	5,310		
Types P2, LP2, D2, WF2,	On other	23,810	23,250	5,920			12,750	600	3,980	560	560
FM2.	Total	55,830	55,270	32,350			12,750	880	9,290	560	560
Conifer seedlings and saplings:											
Types P1, LP1, FM1	On plantations	720	720						720		
	On cutovers	840	840	430					360		
	On other	2,240	2,240	200			2,040				
	Total	3,800	3,800	630			2,040		1,080		
Burned-over areas nonstocked:											
Type F		7,960	6,840	1,290			830		4,720	1,120	1,120
	Total	405,100	388,370	98,230	200	320	152,740	2,350	134,530	16,730	16,730

Table 6.--Net volume of live sawtimber[1/] and growing stock[2/] on commercial forest land by ownership class, 1953

Ownership class	Sawtimber		Growing stock
	Million board feet, log scale, Scribner rule	Million board feet, International ¼-inch rule	Million cubic feet
Private	942	1,018	182
State	3	4	1
County	5	6	1
Federally owned or managed:			
Bureau of Land Mgt.	23	24	5
Indian	2,295	2,486	466
National Forest	1,939	2,099	386
Total Federal	4,257	4,609	857
All ownerships	5,207	5,637	1,041

1/ Includes live trees 11.0 inches diameter breast height and larger measured in board feet.

2/ Includes live trees 5.0 inches diameter breast height and larger measured in cubic feet.

Table 7.--Net volume of live sawtimber and growing stock on commercial forest land by stand-size class, 1953

Stand-size class	Sawtimber		Growing stock
	Million board feet, log scale, Scribner rule	Million board feet, International ¼-inch rule	Million cubic feet
Sawtimber stands:			
Uncut	3,841	4,161	786
Selectively cut	1,333	1,440	234
Total sawtimber	5,174	5,601	1,020
Poletimber stands	32	34	21
Seedling and sapling stands	*	1	*
Nonstocked areas	1	1	*
Total	5,207	5,637	1,041

* Less than 500 thousand.

Table 8.--Net volume of live sawtimber and growing stock on commercial forest land, by species, 1953

Species	Sawtimber		Growing stock
	Million board feet, log scale, Scribner rule	Million board feet, International ¼-inch rule	Million cubic feet
Softwoods:			
Ponderosa pine	3,237	3,511	567
Western white pine	35	38	11
Lodgepole pine	76	90	29
Douglas-fir	800	856	150
White fir	266	288	74
Noble fir	84	90	27
Pacific silver fir	51	55	18
Subalpine fir	24	26	12
Western larch	209	225	39
Alaska-cedar	22	23	7
Incense-cedar	66	73	17
Mountain hemlock	313	336	83
Engelmann spruce	13	14	5
Total	5,196	5,625	1,039
Hardwoods:			
Black cottonwood	11	12	2
All species	5,207	5,637	1,041

Table 9.--Net volume of live sawtimber on commercial forest land by diameter-class group, species, and log rule, 1953

Diameter class and log rule	Total	Ponderosa pine	White pine	Douglas-fir	Other species
	- - - Million board feet - - -				
11.0" to 20.9" d.b.h.					
Scribner rule	1,353	643	15	107	588
International ¼-inch rule	1,526	746	16	124	640
21.0" to 30.9" d.b.h.					
Scribner rule	1,886	1,253	15	184	434
International ¼-inch rule	2,037	1,353	16	198	470
31.0" to 40.9" d.b.h.					
Scribner rule	1,195	879	5	198	113
International ¼-inch rule	1,270	932	6	210	122
41.0" d.b.h. and larger					
Scribner rule	773	462		311	
International ¼-inch rule	804	480		324	
All diameter classes					
Scribner rule	5,207	3,237	35	800	1,135
International ¼-inch rule	5,637	3,511	38	856	1,232

Table 10.--Net volume of all timber on commercial forest land by class of material and species group, 1953

Class of material	Total	Softwoods	Hardwoods
	Million cubic feet	Million cubic feet	Million cubic feet
Growing stock:			
Sawtimber trees:			
Sawlog portion	871	869	2
Upper stem portion	65	65	*
Total	936	934	2
Poletimber trees	105	105	
Total growing stock	1,041	1,039	2
Other material:			
Sound cull trees	1	1	
Rotten cull trees	1	1	
Salvable dead trees	9	9	
Total other material	11	11	
Total, all timber	1,052	1,050	2

* Less than 500 thousand.

Table 11.--Average annual timber cut from live sawtimber and growing stock on commercial forest land by species group for the period 1948-1952 incl.

Species group	Live sawtimber						Growing stock		
	Timber products	Logging residues	Timber cut 1/	Timber products	Logging residues	Timber cut 1/	Timber products	Logging residues	Timber cut 1/
	Thousand board feet, log scale, Scribner rule			Thousand board feet, International ¼-inch rule			Thousand cubic feet		
Softwoods	90,011	4,978	94,989	97,446	5,389	102,835	15,057	1,810	16,867
Hardwoods 2/									
Total	90,011	4,978	94,989	97,446	5,389	102,835	15,057	1,810	16,867

1/ Total of timber products and logging residues. Timber products is the portion of the inventory volume removed from the forest; logging residues is the portion cut or killed in logging and not removed from the forest.

2/ Hardwood cut insignificant.

FOREST SURVEY PROCEDURE

The procedures used in the reinventory of Jefferson County were materially different from the procedures used in the initial inventory. This change in procedures accounts for some significant differences in both the forest-area and timber-volume statistics obtained. Therefore, a brief description of the procedures used in each inventory seems desirable.

Initial Inventory

The initial inventory of the county was conducted in 1934 by what was known as the "compilation method." In this method existing information on forest types, timber cruises, logging records, and other pertinent data were collected from private timber owners and various public agencies. These data were checked in the field for reliability, and were then adjusted to the then existing specifications and standards of Forest Survey. Forest-type and timber-volume data for areas not covered by reliable existing information were obtained through intensive field reconnaissance.

All land in the county was classified as either forest or nonforest. Forest land was further classified as commercial or noncommercial; the commercial was still further classified by forest type, stand-size or condition class, and in case of young growth by stocking class. All such types and classes were mapped in place on 1-inch-to-the-mile base maps of each forested township. These township type maps were then superimposed over current ownership-status plats and dot counted to obtain forest-type area statistics by ownership class. Type delineations on the township maps were traced to a base map of the county to form a county forest type map. The commercial forest land was also classified as to site quality, or forest-productive capacity.

In-place, timber-volume estimates were based on existing cruises collected and adjusted to Forest Survey standards, on field samples, and on ocular estimates. Cruises made by commercial cruisers were obtained for the bulk of the privately owned timber in the county. In the Warm Springs Indian Reservation cruises by the Indian Service covered practically all of the sawtimber stands. Forest Service cruises were available for all of the sawtimber on national forest lands except the mixed stands of species, other than ponderosa pine, occupying the upper slopes and ridges near the summit of the Cascade Range. Separate volume estimates were computed for each of the commercial tree species and for each ownership class.

Reinventory

In the reinventory in 1953 complete revision of the forest type map was accomplished through interpretation, classification, and mapping

on aerial photos, flown in 1951, covering all of the land area of the county. Types, stand-size classes, and stocking classes were similar to those recognized in the initial inventory. However, the aerial photos facilitated mapping of much greater accuracy and detail than was possible through ground reconnaissance in the initial inventory. Type delineations on the aerial photos were transferred to a 1-inch county base map through use of a photo projector. The new type map was then superimposed over the current ownership-status map and a dot count made of forest type areas by ownership class.

Estimates of net volume each of live sawtimber, growing stock, and sound, cull, and salvable-dead material were calculated by applying average per-acre volumes to the appropriate forest-type acreages. The average per-acre volumes for sawtimber stands and poletimber stands were obtained through a sampling procedure in which the stands were measured on randomly selected plots. Intensity of the sampling was so designed as to produce a total estimate of volume in the county of a specified sampling accuracy set by Forest Survey. In the random selection of samples each individual sawtimber or poletimber stand in the county had an equal chance of being selected. A sample consisted of a cluster of 3 one-fifth-acre circular plots spaced at regular 6-chain intervals. A total of 54 plot clusters, or 162 one-fifth-acre plots, was taken in sawtimber and poletimber stands.

ACCURACY OF DATA

Forest Area

In the reinventory of the county, in-place mapping of the forests and their classification by forest type, stand-size class, or condition class were on the basis of 100-percent coverage. Thus no error because of sampling was involved. Errors due to techniques or judgment in the field and in office computation of data were possible, but difficult to evaluate. Throughout all phases of the work close supervision and frequent checks assured a high level of accuracy and uniformity of standards.

Timber Volume

The sampling error of the estimated total net volume of live sawtimber is $\pm$ 11.4 percent. This means that the chances are 2 out of 3 that the total volume in the county, if measured by a 100-percent cruise, would lie within plus or minus 11.4 percent of the estimated volume. The sampling error of the estimated total volume of growing stock is $\pm$ 9.7 percent.

COMPARISON OF INVENTORIES

Some changes in forest-type area or timber volume which have occurred during the 19 years between the initial inventory and the reinventory are due to actual physical change, others are due to differences in procedures and standards between inventories.

Forest Area

The forest land areas, classified by stand-size and condition classes, resulting from the two inventories, are shown in the table below. In this comparison the area of commercial forest land, both in unreserved and reserved ownership status, has been combined. The 1953 acreage by stand-size and condition class shown in tables 2 or 3 of this report is the area of only the unreserved commercial forest land.

Comparison of Forest Land by Stand-Size and Condition Class, 1934 and 1953

Inventory	Total forest land	Unreserved and reserved commercial forest land							Noncommercial forest land
		Total	Sawtimber		Poletimber	Seedlings and saplings	Nonstocked area		
			Uncut	Selectively cut					
	Thousands of acres								
1934	473	400	342	4	25	16	13		73
1953	761	405	239	98	56	4	8		356

The very appreciable change in total area of forest land during the period was not the result of any significant physical change in forest cover. Instead, it was due to a difference in classification of a large acreage of sparsely stocked and low-bushy growth of western juniper. In 1953 this juniper woodland type was classed as noncommercial forest land; in 1934 it was not classed as a forest cover, but part of the nonforest area.

There was but slight change in the total area of commercial forest land. The large increase in noncommercial forest land acreage is due to the difference in classification of the juniper woodland.

The extent of timber cutting during the period is indicated by the respective areas of uncut sawtimber stands. These show a net reduction of 103 thousand acres. However, some of the additional acreage logged has been offset by the acreage of poletimber stands that moved up into the sawtimber class. The net increase in area of selectively cut sawtimber--94 thousand acres—indicates that part of the logging was on a heavy-selection basis that did not leave a reserve stand of 1,500 board feet per acre, the minimum volume of sawtimber stands. Such heavily cut

stands were classed as either poletimber or seedlings and saplings, depending on the size of the trees left on the logged area.

Timber Volume

Comparison of the estimated volumes of live sawtimber on commercial forest land obtained in 1934 with those obtained in 1953 follows:

Comparison of Volume of Live Sawtimber, 1934 and 1953

Inventory	Live sawtimber volume of --		
	All species	Ponderosa pine	Other species 1/
	Million board feet, log scale, Scribner rule		
Initial, 1934	3,935	3,167	768
Reinventory, 1953	5,207	3,237	1,970

1/ Includes Douglas-fir, the true firs, mountain hemlock, western larch, western white pine, lodgepole pine, Engelmann spruce, incense-cedar, and Alaska-cedar.

The estimated sawtimber volume of all species combined in 1953 is some 32 percent larger than the 1934 estimate. However, there was little change in the respective volumes of ponderosa pine which indicates a similarity of standards of utilization in the two inventories, insofar as this important commercial timber species is concerned. In the case of species other than ponderosa pine the timber cruises upon which the 1934 volumes were largely based were no doubt conservative in comparison with present-day standards. Also, some stands which were considered non-commercial in 1934 were classed as commercial in 1953. This change in classification was true of some upper-slope stands at the higher elevations where such species as lodgepole pine and subalpine fir occur.

DEFINITION OF TERMS USED

Land Area

Total Land

Includes dry land and unmeandered water surface.

Forest Land

Includes (a) land which is at least 10-percent stocked by trees of any size and capable of producing timber or other wood products, or of exerting an influence on the climate or on the water regime; and (b) land from which the trees described in "(a)" have been removed to less than 10-percent stocking and which has not been developed for

other use. Minimum area of forest land recognized in reinventory of the county was 10 acres.

Nonforest Land

Land that does not qualify as forest land. Minimum area recognized in the reinventory of the county was 10 acres.

Forest Land Classes

Commercial Forest Land

Forest land which is producing, or is physically capable of producing, usable crops of wood, economically available now or prospectively, and not withdrawn from timber utilization.

Noncommercial Forest Land

Forest land (a) withdrawn from timber utilization through statute, ordinance, or administrative order but which otherwise qualifies as commercial forest land and (b) incapable of yielding usable wood products (usually sawtimber) because of adverse site conditions, or so physically inaccessible as to be unavailable economically in the foreseeable future.

Productive-reserved. Forest land withdrawn from timber utilization through statute, ordinance, or administrative order, but which otherwise qualifies as commercial forest land.

Unproductive. Forest land incapable of yielding usable wood products (usually sawtimber) because of adverse site conditions, or so physically inaccessible as to be unavailable economically in the foreseeable future.

Forest Types

Forest Type

A forest stand characterized by the predominance of certain key species--in terms of cubic volume for sawtimber and poletimber stands, and in number of trees for seedling and sapling stands--or a forest condition such as nonstocked cutover or burned-over land. The major forest types listed in table 3 are of the following composition:

Ponderosa pine. Stands comprised of 50 percent or more of ponderosa pine by cubic volume or number of trees.

Lodgepole pine. Stands comprised of 50 percent or more of lodgepole pine by cubic volume or number of trees.

Douglas-fir. Stands comprised of 50 percent or more of Douglas-fir by cubic volume or number of trees.

Western larch. Stands comprised of 50 percent or more of western larch by cubic volume or number of trees.

Fir-spruce. Stands comprised of 50 percent or more of white fir by cubic volume or number of trees.

Nonstocked areas. Cutover or burned-over areas on which the restocking, if any, is less than 10 percent density and which does not support a residual stand meeting minimum sawtimber requirements.

Tree Classes

Sawtimber Tree

Softwood or hardwood tree 11.0 inches d.b.h. or larger containing at least one 16-foot log to a variable top diameter inside bark approximating 40 percent of diameter breast height, but never less than 8 inches, and in which 25 percent or more of the gross board-foot volume is free from rot and defect.

Poletimber Tree

Softwood or hardwood tree 5.0 to 10.9 inches d.b.h. in which 25 percent or more of the gross cubic-foot volume is free from rot and defect.

Cull Tree

Live tree of sawtimber or poletimber size that is unmerchantable, now or prospectively, because of defect or rot.

Sound cull tree. Live tree of sawtimber or poletimber size which contains 25 percent or more of sound volume but will not make at least one merchantable log, now or prospectively, because of roughness or poor form.

Rotten cull tree. Live tree of sawtimber or poletimber size in which less than 25 percent of the total volume is sound.

Salvable Dead Tree

Standing dead or down tree which contains 25 percent or more of sound volume and at least one merchantable log.

Stand-Size Classes

Sawtimber Stand

Stand of sawtimber trees having a minimum net volume of 1,500 board feet, log scale, Scribner rule.

Large sawtimber stand. Stand in which the majority of the volume is in trees more than 21.0" d.b.h.

Small sawtimber stand. Stand in which the majority of the volume is in trees from 11.0" to 20.9" d.b.h.

Poletimber Stand

Stand failing to meet sawtimber-stand specifications but of at least 10 percent stocking of trees 5.0 inches d.b.h. and larger, with at least one-half the minimum stocking in poletimber trees (5.0 inches to 10.9 inches d.b.h.).

Seedling and Sapling Stand

Stand not qualifying as either sawtimber or poletimber stand but having at least 10-percent stocking of trees and with at least one-half the minimum stocking in seedlings and saplings (0-inch to 4.9 inches d.b.h.).

Uncut Sawtimber Stand

Stand that is essentially undisturbed by cutting.

Selectively Cut Sawtimber Stand

Stand in which a partial harvest has been made, and in which the residual volume amounts to 1,500 board feet per acre or more.

Timber Volume

Live Sawtimber Volume

Net volume in board feet of live sawtimber trees:

Scribner rule. The common board-foot rule used in determining log-scale volume of sawtimber in this region. This rule underestimates, particularly in case of timber of the smaller diameters, the volume of lumber that could be produced from the timber.

International ¼-inch rule. The standard board-foot rule adopted by the Forest Service in the presentation of Forest Survey volume statistics.

Growing Stock

Net volume in cubic feet of live sawtimber trees and live poletimber trees from stump to a minimum 4.0-inch top (of central stem) inside bark.

Sawtimber Volume

Net volume in board feet of live and salvable dead sawtimber trees to a merchantable top.

All-Timber Volume

Net volume in cubic feet of live and salvable dead sawtimber trees and poletimber trees of commercial species, and cull trees of all species from stump to a minimum 4.0-inch top inside bark.

Commercial Tree Species

Tree species that are considered in determining stocking of stands and growing-stock volume. Includes species presently or prospectively usable for commercial timber products.

Commercial tree species in Jefferson County include:

Softwoods:

Ponderosa pine (Pinus ponderosa)
Western white pine (Pinus monticola)
Lodgepole pine (Pinus contorta)
Douglas-fir (Pseudotsuga menziesii)
White fir (Abies concolor and grandis)
Noble fir (Abies procera)
Pacific silver fir (Abies amabilis)
Subalpine fir (Abies lasiocarpa)
Western larch (Larix occidentalis)
Alaska-cedar (Chamaecyparis nootkatensis)
Incense-cedar (Libocedrus decurrens)
Mountain hemlock (Tsuga heterophylla)
Engelmann spruce (Pinus engelmannii)

Hardwoods:

Black cottonwood (Populus trichocarpa)

Timber Cut

Timber Cut from Live Sawtimber

Board-foot volume of live sawtimber trees removed from commercial forest land during a specified year as timber products and that left as logging residue.

Timber products. Board-foot volume of live sawtimber entering into timber products during a specified year.

Logging residue. Board-foot volume of live sawtimber that is cut or killed in logging during a specified year but is not removed from the forest as timber products.

Timber Cut from Growing Stock

Cubic-foot volume of live sawtimber and poletimber trees removed from commercial forest land during a specified year as timber products and that left as logging residue.

Timber products. Cubic-foot volume of growing stock entering into timber products during a specified year.

Logging residue. Cubic-foot volume of growing stock that is cut or killed in logging during a specified year but is not removed as timber products.